

REMARKS

Applicants respectfully request reconsideration and withdrawal of the outstanding Office Action rejections based on the foregoing amendments and following remarks.

Claim 1 has been amended to incorporate the limitations of claim 2, whereby claim 2 has been cancelled. Claims 8, 14 and 23-29 have been amended to place the claims in better condition for examination and to clarify the meaning of the claims. Claim 31 has been amended to recite the limitation "an amount of dielectric fillers," as requested by the Examiner. No new matter has been added.

Claims 8 and 25 stand rejected under 35 U.S.C. § 112, second paragraph. Applicants respectfully submit that the amendments to claims 8 and 25 now place the claims in condition to satisfy the requirements of 35 U.S.C. § 112, second paragraph. Furthermore, claims 14 and 23-29 have been amended to clarify the meaning of the claims and to prevent further delay of prosecution of the present application.

Claim 31 is objected to by the Examiner. Applicants respectfully submit that the amendment to claim 31 now renders this objection moot, as claim 31 has been amended as suggested by the Examiner.

Claims 8 and 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hayakawa (USP. 5,685,968) in view of Hiroki (JP 2002-367856). Applicants respectfully submit that the combination of Hayakawa and Hiroki does not render obvious the present claims for at least the following reasons.

Hayakawa discloses a ceramic substrate with a thin film capacitor disposed thereon wherein the system comprises, outwardly from the ceramic substrate, a lower

electrode base layer which is a metallic electroplating or electro-less plating layer formed on said ceramic substrate, a lower electrode layer formed on said lower electrode base layer, a dielectric layer formed on said lower electrode layer and made from a material constituting the lower electrode layer, and an upper electrode layer formed on said dielectric layer (see columns 5 and 6 of Hayakawa).

Therefore, Applicants submit that the material constituting the dielectric layer in Hayakawa is formed by anodizing the material of the lower electrode layer. In other words, the material of the lower electrode layer that is oxidized forms the dielectric layer. The dielectric layer of Hayakawa is not formed by sputtering.

In contrast, the dielectric layer of the present claims is formed by the sputtering of a metal containing film wherein the thickness of the sputtered film is 1.0 micron or less and wherein the dielectric layer is formed on a side of the copper foil or on the binder metal layer formed on a side of the copper foil. Furthermore, the amendments to claim 1 now require the dielectric layer to be sputtered from at least one of the group consisting of aluminum oxide, tantalum oxide, barium titanate and combinations thereof. Applicants submit that Hayakawa is completely silent with respect to a dielectric layer sputtered from at least one of the group consisting of aluminum oxide, tantalum oxide, barium titanate and combinations thereof. Accordingly, the dielectric layer of Hayakawa is formed with compositions different from those of the present claims.

Hiroki discloses a capacitor comprising a dielectric layer sandwiched by a first conductor and second conductor, an organic/inorganic compound dielectric layer comprising metal oxide fine particles and an organic polymer wherein the density of the

metal oxide fine particles is arranged to be differentiated in the composite dielectric layer of the organic/inorganic network, and wherein the larger density particles are on the first conductor surface and the smaller density particles are away from the first conductor surface.

Hiroki discloses a polyimide resin as a part of the dielectric layer in claim 5 as follows, "The capacitor according to claims 1 to 4 wherein the organic polymer is any one selected from polycarboxylic acid resin, polyamine resin and polyimide resin." Column 0007 of Hiroki discloses "it was found out that organic/inorganic composite dielectrics which has both high dielectric constant and excellent flexibility can be formed by electrodepositing metal oxide fine particles with a high dielectric constant followed by electrodepositing a organic polymer."

Hiroki also discloses, at column 0024, that "a copper foil 1 with thickness of 15 microns was dipped into the obtained suspension liquid of titanium oxide fine particles, and then titanium oxide fine particles were deposited on the copper foil by applying DC 10 V within copper foil as a cathode and graphite plate as an anode. After that, the layer made of the titanium oxide fine particles was dipped into UV-curable cation functional resin varnish without drying followed by applying DC 15V within copper foil 1 as a cathode and graphite plate as an anode to deposit organic polymer 5 onto the layer made of the titanium oxide fine particles. After pre-drying, UV light was irradiated to cure and finish the organic/inorganic composite dielectric layer 5."

As disclosed in Hiroki, the dielectric layer is composed of "the layer formed by depositing metal oxides (titanium oxide and the like) and an organic polymer." The

dielectric layer of Hiroki applies an organic polymer layer onto a layer in which fine metal oxide particles are deposited to protect dropping off of the metal oxide fine particles from the layer composed of deposited metal oxide fine particles and to make the coarse surface constituted with metal oxide particles smooth.

The purpose of the polyimide resin layer of Hiroki is not to seal pit-like defective portions of the dielectric layer, as disclosed in the present claims. The polyimide resin of the present claims acts to seal pit-like defective portions in the dielectric layer and is made of an inorganic-oxide sputtered film with a thickness of 1.0 micron or less. Accordingly, Applicants submit that one of skill in the art would not rely on Hiroki for disclosure of a polyimide resin to seal pit-like defective portions of a sputtered thin film. Furthermore, Hiroki does not disclose a method for forming the dielectric layer by sputtering an inorganic-oxide film with thickness of 1.0 micron or less. Therefore, Applicants submit that one of skill in the art who wished to seal pit-like defective portions of a sputtered dielectric layer would not rely on the disclosure of Hiroki. Furthermore, the amendments to claim 1 now require the dielectric layer to be sputtered from at least one of the group consisting of aluminum oxide, tantalum oxide, barium titanate and combinations thereof. Applicants submit that Hiroki is completely silent with respect to a dielectric layer sputtered from at least one of the group consisting of aluminum oxide, tantalum oxide, barium titanate and combinations thereof.

Applicants respectfully submit that Hayakawa and Hiroki, on their own, do not disclose enough information for one of skill in the art to rely on either of these documents to arrive at a dielectric layer that is sputtered from one of aluminum oxide,

tantalum oxide, barium titanate and combinations thereof wherein a polyimide resin is used to seal pit-like defective portions of the dielectric layer. Combining these disclosures does not cure these noted deficiencies.

Applicants submit that combination of Hayakawa and Hiroki would only lead to a ceramic substrate comprising, outwardly therefrom, a lower electrode formed on the ceramic substrate, a dielectric layer formed on the lower electrode and formed by anodizing the material constituting the lower electrode, an organic polymer layer applied on the dielectric layer and an upper electrode formed on the dielectric layer comprising the organic polymer layer.

Accordingly, Applicants respectfully submit that Hayakawa and Hiroki, either alone or in combination with each other, does not and can not render obvious the present claims because both Hayakawa and Hiroki do not teach or suggest a dielectric layer provided copper foil for forming a capacitor layer wherein the dielectric layer is an inorganic-oxide sputtered film formed from at least one of the group consisting of aluminum oxide, tantalum oxide, barium titanate and combinations thereof with a thickness of 1.0 micron or less wherein pit-like defective portions of the dielectric layer are sealed with a polyimide resin.

In view of the foregoing amendments and remarks, Applicants respectfully request withdrawal of the outstanding Office Action rejections. Early and favorable action is awaited. The Director is authorized to charge any fees or overpayment to Deposit Account No. 02-2135.

Respectfully submitted,

By

A handwritten signature in black ink, appearing to read "Robert B. Murray", is written over a horizontal line.

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